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DEPARTMENT OF THE ARMY
US ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND
EDGEWOOD CHEMICAL BIOLOGICAL CENTER
5183 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MD 21010-5424

REPLY TO
ATTENTION OF

RDCB-DPS-RS

27 AUG 14

AUG 2 7 2014

MEMORANDUM THRU Director, Edgewood Chemical Biological Center, (RDCB-D/Mr. Joseph Wienand), 5183 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5424

FOR Defense Technical Information Center, 8725 John J. Kingman Road, Ft Belvoir, VA 22060

SUBJECT: Internal Request for Change in Distribution

1. This action is in response to an Edgewood Chemical Biological Center (ECBC) Internal Request for a Change in Distribution on documents related to cyanogen chloride.

2. The listed documents in the attachment have been reviewed by ECBC Subject Matter Experts and deemed suitable for the change in distribution to read "Approved for Public Release; distribution unlimited."

3. The point of contact is Adana L. Eilo, ECBC Security Specialist, (410) 436-2063, adana.l.eilo.civ@mail.mil.

Encl

MATTHEW A. SPAULDING
Security Manager

Cyanogen Chloride References

[1] Armstrong, GC, *Toxicity of Cyanogen Chloride to White Mice by Inhalation,* War Department, Chemical Warfare Service, Edgewood Arsenal, MD, 03 March 1933. Unclassified, Dist. D. DoD/Contractors. AD# B956466.

[2] Fuhr, I., Krackow, E.H., *Cyanogen Chloride LC 50 for Rats: 2 min. Exposure,* **TRLR-27,** . Edgewood Arsenal, Aberdeen Proving Ground, MD, 12 April 1944, Unclassified, Dist. D, DoD/Contractors. AD# B967754

[3] E.H. Krackow, Fuhr, I., *Cyanogen Chloride LC 50 for Rabbits: 2 min. Exposure*, **TRLR-33**, Edgewood Arsenal, MD, 31 May 1944, Unclassified, Dist. D, DoD/Contractors. AD# B967782.

[4] Bass, A.D., Tucker, V.J., *Cyanogen Chloride, Informal Progress Report No. 37,* **CB-186516,** National Defense Research Committee of the Office of Scientific Research and Development, Washington, DC, 22 June 1943, Unclassified, Dist. E, DoD Only.

[5] Kolls, AC, Kuhn, HA, and Todd, AJ, *Report on Toxicity Tests on Mice*, **Report No. 33** in Marshall, EK ed., **Pharmacological and Research Section Monographs**. War Department Chemical Warfare Service, Research Division, American University Experiment Station, Washington, DC, c. 1917. On file with the Historical Research and Response Team, Research, Development and Engineering Command, Aberdeen Proving Ground, MD. Unclassified, Dist. E, DoD Only.

[6] Franklin, R.C., Wilding, J.L., Stone, W., Franklin, R.T., *A Study of Short Interval Exposures of Goats to Cg, Ck, and Ac*, **CB-004057**, Dugway Proving Ground, UT, 28 November 1945, Unclassified, Dist. B, U.S. Gov't Agencies Only.

[7] Kolls, AC, Kuhn, HA, and Todd, AJ, *Report on Toxicity Tests on Mice*, **Report No. 41** in Marshall, EK ed., **Pharmacological and Research Section Monographs**. War Department Chemical Warfare Service, Research Division, American University Experiment Station, Washington, DC, c. 1917. On file with the Historical Research and Response Team, Research, Development and Engineering Command, Aberdeen Proving Ground, MD. Unclassified, Dist. E, DoD Only.

WAR DEPARTMENT

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Kolls AG; Kuhn HA; Todd AJ
Report on Toxicity Tests on Mice
Report 41

PHARMACOLOGICAL AND RESEARCH SECTION

E. K. MARSHALL, IN CHARGE

REPORTS 1 to 50

No. 41.

REPORT ON TOXICITY TESTS ON MICE

BY

A.C. KOLLS, H. A. KUHN AND A. J. TODD

#41

REPORT OF TOXICITY TESTS ON MICE

BY

A. C. KOLLS, H. A. KUHN and A. J. TODD

Allyl Amine — Volability -- 150

Conc. in mgms. per liter	No. Mice exposed	No. Mice Died in 24 hours	Percent died	Delayed deaths	Percent died
15	2	2	100		
10	2	2	100		
6.5	2	1	50	1	50
6.0	2			2	100
3.5	2				

Toxic concentration is 6.5 mgms. per liter.

SYMPTOMS:

There was a marked increase in activity which later gave way to deep depression. Nasal irritation was shown at once by rubbing of the nose and by a slight nasal discharge. The eyes were closed immediately and a watery discharge occurred from them.

Respiration was slow and deep in the first part of the exposure, but it became spasmodic and there was frequent gasping in the last half of the exposure. Death usually occurred within twenty-four hours at and above the toxic concentration.

Nitromethane — Volatility -- 18

Conc. in mgms. per liter	No. Mice exposed	No. Died in 48 hours	Percent died	Delayed deaths	Percent died
14.0	2			1	50
7.0	2			1	50
6.0	2				
2.0	2				

Toxic concentration is 7 mgms. per liter which causes delayed deaths.

SYMPTOMS:

Irritation of nose and eyes is shown by rubbing nose and lachrymation. Respiration becomes rapid and shallow with occasional gasping. Depression is quite marked after a few minutes exposure. With a concentration of 14 mgms. per lite death occurred in five days and with a concentration of 7mgms. per liter, death occurred in eight days.

Ethyl Arsine See P.R 40.

Conc. in mgms. per liter	No Mice exposed	No. Mice died in 48 hours	Percentage died	Delayed deaths	Per-cent died
69	2	2	100		
47	2	2	100		
10	2	2	100		
6.5	2	2	100		
1.5	2				

Toxic concentration is below 6.5 mgms. per liter.

Sample exploded and prevented further determinations. Gas is spontaneously inflammable at 35 degrees Centigrade.

SYMPTOMS:

At concentrations of 47 and 69 mgms. per liter, there was marked nasal irritation, continual gasping, convulsions and death in a few minutes. After death there was marked flexer rigidity.

At concentrations of 10 and 6.5 mgms. per liter, there was marked nasal and lachrymal irritation. There was a brief period of increased activity which was soon followed by deep depression. The respiration was deep and irregular at first but soon became rapid and shallow. Near the end of the exposure the mice became very weak, uncertain in movements, trembled convulsively, and finally became prostrate. Death occurred within 30 minutes after exposure and was preceded by a brief convulsion.

At a concentration of 1.5 mgms. per liter, both nasal and lachrymal irritation were shown. A brief period of increased activity was succeeded by deep depression. Respiration was slow, shallow and irregular with occasional gasping.

Mercury Dimethyl V-138

Conc. in mgms. per liter	No. Mice exposed	No. Mice Died	Percent died	Delayed deaths	Percent died
14.0	2	2	100		
7.5	2	2	100		
4.1	2	2	100		
3.9	2				
3.0	2				
3.0	2				
2.5	2				
1.5	6				

Toxic concentration is 4.1 mgms. per liter. Gas corrodes rubber readily on standing in contact with it.

SYMPTOMS:

There was a slight increase in activity which was soon followed by marked depression. Irritation was shown on nose, eyes, ears and feet. The nose was rubbed vigorously and soon became very red. The eyes were closed tightly and the lids soon became very much inflamed. Ears and feet were washed and rubbed frequently by the mice and also became red. Respiration became rapid, shallow and irregular, and continued throughout the tests. Deaths occurred within 20 hours.

G-178

Conc. in mgms. per liter	No. Mice exposed	No. Mice Died in 48 hours	Percent died	Delayed deaths	Percent died
4.5	2	2	100		
0.8	4	3	75		
0.5	2	1	50		
0.4	2	-	---		
0.2	6	-	---	3	50
0.1	2	-	---	-	--

Toxic concentration is 0.5 mgm. per liter.

SYMPTOMS:

After a short period of increased activity mice became very much depressed; later they became weaker and finally collapsed. The extremities became hyperaemic after a few minutes of exposure, but this gradually disappeared, reappearing prior to death. Respiration is quick and deep at first but gradually becomes rapid, shallow and irregular with occasional gasping. At and above a concentration of 0.5 mgms. per liter, death occurred during exposure and was preceded by convulsions with exophthalmos typical of asphyxia. Fifty percent of mice exposed to a concentration of 0.2 mgms. per liter, died in sixty to one hundred hours probably due to an irritation product of the decomposition of the gas.

G-70 - Sample #2-DP-130°-145° Volatility 15

Conc. in mgms. per liter	No. Mice. exposed	No Mice. in 48 hours	Percent died	Delayed deaths	Percent died
6.0	2	2	100	1	50
5.5	2	1	50	1	50
4.0	2	1	50	1	50
3.0	2	1	50	2	50
1.5	4	-	-	1	50
1.0	2	-	-	1	50

Toxic concentration is 3.0 mgms. per liter.

SYMPTOMS:

Very marked irritation of nose and eyes. The animals were alternately active and then depressed throughout exposure. The extremities became hyperaemic. Respiration was slow and deep with occasional gasping.

G-301 Phenyl isocyanate Volatility 7

Conc. in mgms. per liter	No. Mice exposed	No. died in 48 hours	Percent died	Delayed deaths	Percent died
7.0	4	4	100		
5.0	4	4	100		
1.0	6	-	-	1	17
0.5	6	-	-	-	-

Toxic concentration lies above 1.0 mgms. per liter .

SYMPTOMS:

After a brief period of activity the mice became depressed. Very marked irritation of nose and eyes. Death at and above 5 mgms. per liter occurred in 24 hours.

Toxic concentration was not worked out more definitely due to lack of material.